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(12) **United States Patent**
Kao

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(54) **OXYGEN GENERATOR**

5,922,178 A * 7/1999 Isenberg B01D 53/00

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5,928,610 A * 7/1999 Moran B01D 53/053

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7,976,617 B2 7/2011 Kao

7,998,256 B2 8/2011 Kao

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* cited by examiner

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(57) **ABSTRACT**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,922,149 A * 11/1975 Ruder B01D 53/0454
95/130

4,869,733 A * 9/1989 Stanford B01D 53/04
95/138

An oxygen generator, including an upper casing, a base and a lower casing, has a large opening on both sides of the base for installing a molecule tube whose upper and lower plugs are inserted and positioned into engaging slots of the upper and lower casings respectively. An air pump is installed at the bottom of the lower casing and has a motor to drive a cam to drive high-pressure air into the molecule tube through a flow channel and the lower plug of the lower casing. High-pressure oxygen produced after the action of the molecular sieve material passes through flow channels inside the upper plug and the upper casing and remains in the oxygen storage tank. During use, high-pressure oxygen is outputted from an oxygen output regulating valve, converted by an oxygen output solenoid valve, and discharged from a locking slot of the upper casing. The molecule tubes on both sides complement each other through the oxygen re-supplying solenoid valve of the upper casing and an oxygen re-supplying passage of the upper casing of the molecule tube.

8 Claims, 14 Drawing Sheets

